

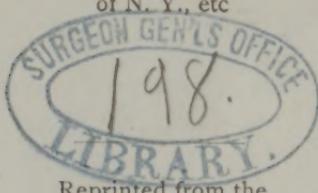
GOODWILLIE (D. H.)

An Address  
ON  
ORAL SURGERY

Delivered before the American Medical Association.

BY  
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## ADDRESS ON ORAL SURGERY.

By D. H. GOODWILLIE, M. D.,  
NEW YORK CITY.

*Mr. President and Fellows of the American Medical Association:—*

Having been honored by you as the first presiding officer over the new section created by your action last year at Richmond, Va., I am before you, to answer to the duty put upon me.

It is another indication of progress in the healing art that this representative body of the profession in this country should include in its deliberations everything that goes to secure health and happiness to mankind.

There are two natural divisions in the subject of this Section, namely:—

*First.—Dental Art*, which is nearly all of a mechanical nature; and,

*Second.—Special Surgery*, which includes the treatment of all diseases connected with the mouth.

To the proper practice of the latter it is necessary that there be added the experience of the former, with a practical knowledge of medicine and surgery.

There are few who may possess the ability to acquire the requisite theoretical knowledge, and to put it into full practice in both divisions above referred to, as they both have become so intricate.

Every properly qualified general practitioner should have at least a theoretical knowledge of all diseases of the mouth, so as to be able to make a proper diagnosis, or, by his timely advice, prevent disease. For this purpose I would have established, in every medical college, a chair of oral surgery, that would at least give a theoretical knowledge, and require it of every graduate—the practical instruction to be obtained in a hospital and dispensary devoted to this specialty.



All medical officers appointed in the army and navy should have practical experience in all diseases of the mouth.

In the period of more than a score of years of professional life, the first part of which was spent in the treatment of diseases of the teeth, and latterly has been exclusively given to diseases of the mouth and associate parts, pardon me for trespassing on your time in giving you an outline of such experience as, I hope, may be most interesting to you. I desire briefly to call your attention to some of the diseases of this part by illustrative cases, and to exhibit some by means of wax models, diagrams, etc.

A simple interference with mastication, for instance, in the child, interferes with the proper nourishment of the body, so necessary for not only supplying the waste of the tissues, but for the growth and development of every organ and tissue. At this stage alimentation is of vital importance, and mastication is the very first act in the process.

The process of development of the deciduous teeth, commencing *in utero* and completed early in the life of the child, escapes, to a great extent, from the effects of many diseases incident to childhood, but they often produce sad results on second dentition. Many disturbances of the vital processes interfere with development, and produce characteristic marks upon the permanent teeth, so that in adult life you may be able to tell what was the kind of disease, and the period at which it occurred in the process of development.

*Dentition* is a physiological process, and seldom takes on pathological changes, except as influenced by some disturbance of the general system. During the first two years of life first dentition takes place; and in this period also the child is subject to numerous diseases, often of a dangerous kind.

The teeth and the liver are often made the scapegoats for a good deal of ignorance, both professional and lay. For if no ready cause can be found for ailments, these poor organs get more than the lion's share of the blame.

How many thousands of children have fallen victims to the fallacy of the laity that teething is a disease,—a necessary consequence,—and that little or nothing can be done. So it comes that the ever-watchful vender of marvelous drugs and baby-foods finds in this a fruitful field for cultivation, to turn an honest penny in, and so comes to the rescue with his able assis-

tants in the person of parents, auntie, or some sympathizing friend; and between them the poor little sufferer (if he is not drug proof) is soon sent to kingdom come.

Not long since, in company with the coroner, we made investigation as to the cause of the death of a child, and found full evidence that its life here had received a *fatal soothing*, by means of Mother Winslow's marvelous syrup administered from the hand of the mother for teething.

At the present time I have in hands a child upon whom I made an operation for cleft palate and hare-lip, whose mother, against my strict orders, but rather taking the advice of an old wise auntie, persisted in secretly stuffing her child with other so-called baby-foods, to the exclusion of nature's true food—milk. I only came off victorious when the child's body became covered by a cutaneous eruption.

In these days of enlightenment in medical science, it is deplorably true that certificates of death from teething are still given, as the following letter from Dr. John T. Nagle, registrar of the Bureau of Vital Statistics of the Health Department, of the city of New York, shows:—

NEW YORK, May 31, 1882.

D. H. GOODWILLIE, M. D.

DEAR DOCTOR:—In reply to yours of May 28th, I respectfully inform you that in the year 1868, there were forty-one deaths—twenty-one male, and twenty female,—attributed to “teething” alone. Since I have been here I have returned all certificates where there was no other cause assigned than dentition for the reason that you state.

Yours truly,

JOHN T. NAGLE.

Alas! A normal physiological process the cause of death.

If first dentition in the child is the cause of death, why not carry it through the process of second dentition, which lasts to nearly adult age? Perhaps it might be found that malaria, small-pox, or some of the other diseases, lie buried in the jaws.

*Facial neuralgia* in a great majority of cases arises from—

*First.*—*Peripheral irritation* of the dental nerve from exposure by caries or attrition of the dental tissues, or ossific deposits in the pulp-chamber, producing a very severe form of neuralgia.

*Second.*—*Decomposition* of the dental pulp (that is, artery, vein and nerve, supplying the tooth) from chronic pulpititis

opening into the mouth, forming what is commonly called a gum-boil (alveolar abscess).

*Third.*—*Maxillary* abscess, which may eventually open into the adjacent salivary glands, tonsils, nostrils, antrum, etc., causing great trouble in these parts.

*Fourth.*—*Traumatic causes*; namely, blows, excessive heat or cold, foreign substances pushed through the pulp canal into the jaw, certain drugs, etc.

There are also reflex irritations produced by disease of the teeth, that affect remote parts of the body. The following illustrative case is given by the writer in a paper read before the New York Neurological Society, on “Lesions of the Trifacial,” and published in the *Journal of Nervous and Mental Diseases* for April, 1876.

Professor Zagus, of the University of Cuba, sent me the following: “The child, in his own family, who is the subject of these observations, was born eleven years ago, of healthy parents; she also was of healthy aspect and condition. When six months old, and without having suffered any previous disease, it was observed, when taking her from the bed in the morning, lifting her under her arms, that she cried, having a remarkable contraction of her features, as a child in great pain might do; and at the same time both her lower limbs were contracted. She presented at that time the symptoms which announce the proximity of the first teeth cutting the gums. It was remarked at the same time that she could not creep as do other children of the same age. In spite of her strong appearance, she could not master the contraction or extension of her limbs, and was obliged to creep, bearing the whole weight of her body on her arms alone. When eight months old, and when two or three teeth had appeared, it was observed that the region of the lumbar vertebrae was projecting somewhat; but the curvature at that time was scarcely perceptible. So she continued crying painfully whenever she was lifted from the floor, or from her bed, though with intervals of ease. She began to walk when a year old; and when she had completed her second year, she had a most painful eruption upon the left thigh, which was a strongly characterized *zoster* with the acute pains which usually accompany this sickness. This limb was always more contracted than the other from the very beginning of her illness. We may here remark the coincidence of the *zona* with the appear-

ance of this same sickness in other cases of nervous suffering. The child walked without difficulty, and even ran; but from time to time she would suddenly complain of acute pains in her limbs, and was forced to remain in bed one, two, or even three days, in a paralyzed condition; and then, as suddenly, she would rise, run or walk as usual, though almost constantly with her left limb contracted, and walking with her left foot on tip-toe. Her teething continued its regular course. Her general health was good; but the lumbar curvature became more apparent.

When five years of age, one evening at half-past seven, about three hours after her dinner (which time she had spent playing), she was seized with an attack of eclampsia which lasted about five hours, and in which she was in danger of death. That this attack was not caused by indigestion is clear from the fact that an emetic administered to the child immediately only brought up some remains of the dinner already converted into paste, but did not in any degree lessen the convulsions. Bromide of potassium, mustard plasters, and warm mustard baths had no effect on her; but a spoonful of chloroform caused the attack to cease immediately; and after five hours of refreshing sleep she awoke well, though still complaining of the pains in her limbs. Neither sea-baths nor medicines of any kind produced any change for the better. Some time after a consultation of physicians was held, and they came to the conclusion that it was Potts disease; for the spinal curvature had increased greatly. They ordered the child cod liver oil.

Being resolved to take the child to Europe, my attention was attracted by a strange coincidence. I observed whenever she would complain of her limbs her face would swell, and she would carry her hand to her face as often as to the painful limb. This fact I noticed several times, and at once concluded that all her ailments from the age of six months—the spinal curvature, zona, painful contraction of the limbs, and eclampsia—had their origin in the irritation of the buccal cavity.

I examined her mouth, and found that she had a decayed tooth. The following day, notwithstanding the great pain she complained of in her limbs, I took her to a dentist and had the decayed tooth treated; and twenty hours after all pain and contraction had ceased. The only permanent derangement was that of the spine, the bones of which had suffered for so long a time

the constant action of the muscles subjected to an abnormal contraction.

Some time after, when that same tooth became again painful, she complained once more of the same pains in her limbs, and as on previous occasions her face was swollen. I brought her again to the dentist and had the tooth extracted. All pain and contraction disappeared in the course of a few hours.

The spinal curvature is to-day pretty nearly the same as it was three years ago. The child is strong and healthy.

*Clefts of the palate* may be acquired or congenital. Differential diagnosis is not difficult, but the treatment is important and varied to each case.

In the former the producing disease must, in the first place, be entirely eradicated, and then the defects remedied, either surgically or by an artificial appliance.

*Congenital clefts* of hard and soft palate are of every variety. I have in my museum numerous varieties from a simple cleft of the uvula to a fissure of soft and hard palate, both sides of the intermaxillary including the lip.

I cannot detain you at this time to present the treatment of each variety. Suffice it to say that the means of correction lies in the treatment, either surgically or by artificial appliances, or a combination of both.

Believing as I do that these congenital defects should be corrected in infancy, I will only give you an outline of the *operation for closure of the hard palate and hare lip immediately after birth*, reserving the full detail of my method to some other occasion when illustrative cases can be given.

In many cases there is tissue enough developed, but there is a failure to unite, and the maxillary bones are separated, making the diameter from side to side greater in proportion to other parts of the face.

What is of special importance in this method is to restore the bones to the normal position without any loss of hard or soft tissue, except so much as would be required to freshen the edges of opposing parts.

The cleft of the hard palate, and of the lip, if any exist, should be closed soon after birth, and before the child is two months old, to avoid injuring the developing teeth.

The closure of soft palate, if it is to be by a surgical operation, should be done, if possible, before the child begins to speak at about two or three years of age.

*My method* I will illustrate by a case represented in the wax model that I pass around, and which was taken from a cast of a child one week old, and also by diagrams. By its examination you will see presented a cleft of the lip on the left side, and also a cleft through the left of the intermaxillary extending through hard and soft palate.

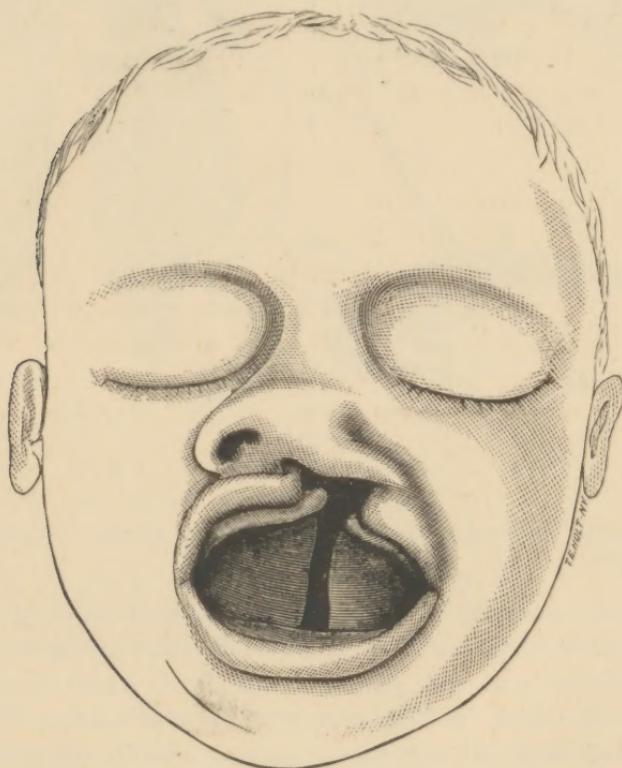


Fig. 1.

Bone development has been sufficient in amount, but there being a failure to unite the two sides in the process of growth, the bones became separated, and the intermaxillary attached to the right maxillary leaves the normal anatomical form of the anterior alveolus and becomes more or less straight; the free end of the intermaxillary protrudes forward into the cleft of the lip. (Fig. 1.)

By this straightening process the nose is carried to the right side as the anterior part of the nasal septum rests on the intermaxillary, while the left alve is very much stretched to the left.

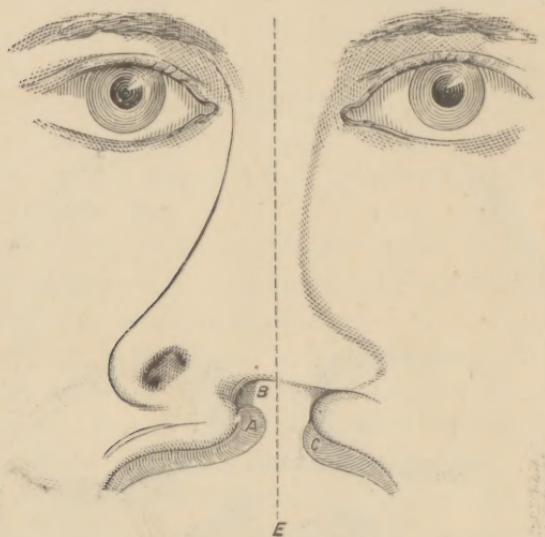


Fig. 2.

E, the normal perpendicular line of the nose. A and C, alveolar ridge to be united  
B, nasal septum.

The usual practice is to only close the lip in infancy; but in order to do so it is necessary to have the protruding end of the intermaxillary removed, either by cutting it away or crushing it, both of which is bad surgery. In the former the bone is removed with all the tooth germs; and in the latter, the germs are destroyed and the parts misshapen.

The operation for the relief of the deformity the model represents in this case was made in the following manner:

The child was placed under an anaesthetic, and by means of a small revolving knife and the surgical engine a small V-shaped section was removed inside of the alveolar process of the intermaxillary (Fig. 3, E), also running up into the septum a very little (Fig. 4, D), and at the same time the edges of cleft of the hard palate are freshened by the revolving knife.

Holes are also cut in either side of the hard palate for the purpose of passing suture pin clamps to hold the maxillæ together.

Just enough was taken away by the V-shaped section to allow the alveolus of the intermaxillary to resume its normal position.

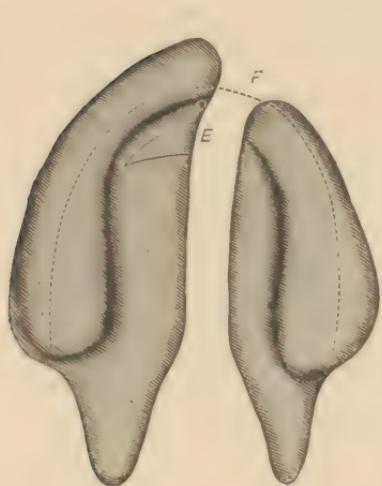


Fig. 3.

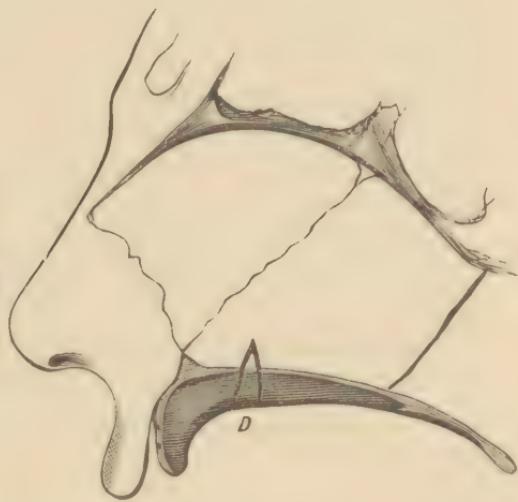


Fig. 4.

Now, by means of a properly constructed forcep, the maxillary bones are forced together so as to close the cleft in the hard palate. Then a nasal forcep is passed into the nostrils, grasping the septum, and the nose drawn into perpendicular position, and at the same time the intermaxillary is forced into its normal place, closing up the V-shaped section made by the revolving knife.

The alveolar ridge of the intermaxillary now connects with the maxillary of the opposite side. (See dotted line, Fig. 3.)

They are now held together by the *suture pin clamps* which I have devised for the purpose, made of the very best steel and gold plated.

The cleft in the lip is now closed by first carefully applying the *compression lip clamp* on each side of the cleft lip to prevent hemorrhage. After the edges are pared, then carefully approximate both skin and mucous membrane by passing the first ligatures in the vestibule of the nostril and ending with the vermillion border, and then complete the operation by passing the suture pin clamps to take the stress off the sutures.

In all simple or double clefts *all* bone tissue should be preserved to prevent deformity in adult life.

The advantages of this method are, namely :

*First.*—The cleft in the hard palate is closed in all cases where there is the normal amount of bone developed.

*Second.*—The alveolar ridge with the tooth germs are saved and brought into place, securing, as near as possible, the normal outline of the mouth and subsequent development of the teeth.

*Third.*—The nose is brought into normal position and over-distended nostril restored.

*Fourth.*—The normal appearance of the face is reclaimed.

It is now nearly a quarter of a century since I saw, while a student in a foreign city, a world-renowned surgeon lay open the face, and extirpate nearly half of the superior maxillæ, for a small benigned tumor, from the canine fossa, with all the periosteum. I cannot forget the intense feeling of disgust at the operation it produced in me, and sympathy for the patient, as I day after day met him on the street, with the indelible marks of the surgeon's knife,—with a deformity on him for life.

My blood has never ceased to boil over that case. But I am thankful that we have fallen in better times, surgically.

The most efficient means of removal of diseased bones of the mouth and nose is the *surgical engine*, whereby revolving instruments, of various sizes and shapes, enable the surgeon to successfully remove diseased bone, while the periosteum is preserved, and a new bone formation is secured, thus preventing deformity.

Also for trepanning mastoid cells, maxillary abscesses, laying bare the superior and inferior maxillary nerves, exostosis of the ear, nose, or mouth, or, indeed, any other part of the body.

It is quite necessary that the engine be sufficiently heavy and strong to carry the cutting instruments well.

What is of great importance is properly prepared and efficient instruments for cutting, sawing, drilling, etc. A few days after the dental engine was first completed, I used it in a case of neerosis of the jaw, and became convinced by that trial that, by some modification and improvements, it was destined to inaugurate a new era in some surgical operations at least.

The following cuts will represent some of the instruments found to be most efficient from a somewhat extended experience with them.

In December, 1872, the writer devised and made use of single and multiple revolving knives, saws, and trocars, for operations upon the hard and soft tissues of the mouth and nose, the revolving power being supplied by the *surgical engine*. This consists of a fly-wheel, set in motion by the foot, a driving-pulley, and a communicating cord. On the top of the upright movable shaft the pulley is connected to a flexible wire cable inclosed in a flexible sheath. This cable is connected to the hand-piece, in which can be put any revolving instruments. The flexibility of the wire cable allows the instrument in the hand-piece to be freely used at any angle. The hand-piece, held in hand as you hold a pen, is under perfect control. The instruments are securely fastened in the hand-piece by means of a spring catch.

The *single revolving knife* (Fig. 5) is circular and sharpened on the edge (*a*), and has a protecting sheath (*b*) to cover up the part of the knife left exposed.



Fig. 5

Under a velocity of two or three thousand revolutions per minute, the single revolving knife, in cutting soft, sensitive parts, gives little or no pain.

The *multiple revolving knives* (Fig. 6) are arranged around the end of a shaft in an acute angle, and *cut* as they revolve, and



Full size.



Fig.

do not *scrape* as the dental burrs. These instruments have a protecting sheath (Fig. 7), to be used when necessary.

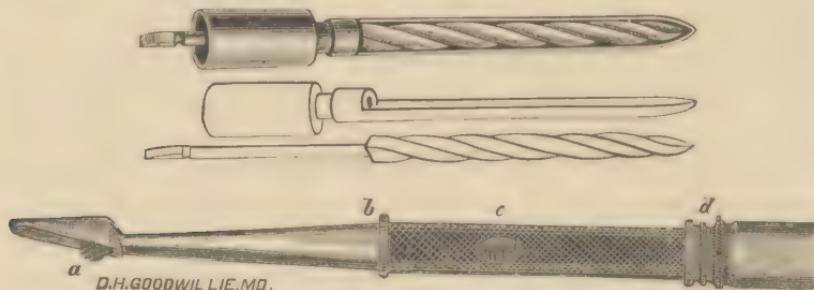


Fig. 7.—Knife (a) within the sheath.

*Saws*, like the single knives, are circular, and have teeth on the edge and sides, and are of all sizes.

The *trocars* are of different forms and sizes, and they are intended to make an opening, and then to enlarge it. Fig. 8 shows two of the most efficient ones: the spiral cutting edge, and the other flat, with two straight cutting edges and double edges on the point.

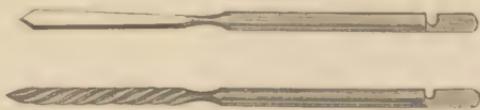


Fig. 8.

#### INTER-NASAL AND SUBPERIOSTEAL EXTRIPATION OF BONES OF THE NOSE AND MOUTH.

CASE I.\*—Mrs. C. T., aged 35; born in New York; married November 25, 1868. Up to this time quite healthy. Four months after marriage had syphilis, for which she received treatment by her family physician. Up to present time has had four births. Her first child still-born at six months; second child born at full term, and lived a week; third child still-born at eight months; fourth child born at full term, and lived ten months.

In 1872 had syphilitic laryngitis, and was salivated. She came under my care in November, 1874. On examination, I found necrosis of the vomer, lower portion of the ethmoid, vault of the hard palate, and inferior turbinate bones of both sides, and alveolus of the intermaxillary bone. There was a hole

\* Medical Record, July 12, 1879.

in the hard palate a half-inch in length. Front teeth quite loose from necrosis of the maxillary bone. These were at once removed. Rhinoscopic examination very difficult to make, as the uvula and soft palate were much swollen. Large ulcers on the pharynx. To combat the specific poison the patient was put upon iodide of potassium, two grammes, and increased to four grammes a day, with tonics and nourishing food.

April 29, 1875, operated for the extirpation of the necrosed bones. There were present Drs. A. C. Post, J. T. Darby, Leonard Weber, L. B. Bangs. All the necrosed bones were removed by the revolving multiple knives through the opening in the palate and through the nostrils. The necrosed palatal vault, both inferior turbinate bones, and a small portion of the vomer, were removed through the opening in the palate; through the nostrils, all the necrosed portion of the maxillary bone, and the anterior portion of the vomer and ethmoid.

The posterior portion of the vomer was now seized with the forceps, and removed. By this means the soft parts covering the vomer were left intact, so that by a rhinoscopic examination the posterior part of the septum was seen as before the operation. In this case there appeared to be a reproduction of bone in this part of the vomer, and, to some extent, of the hard palate.

A few days after removed by the knives some small necrosed portions of the intermaxillary, after which the parts healed rapidly. The voice somewhat nasal in tone until the opening in the palate was closed.

In October, 1875, about six months after the extirpation of the necrosed bones, uranoplasty was performed for the closure of the opening in the hard palate, which was now three-fourths of an inch in length. After removing the mucous membrane from edges, an incision is made on each side of the fissure through the soft parts and newly formed bone of the hard palate.

The soft parts were cut through by means of a galvanocautery knife, and so had no bleeding. The bone is now pierced by the drill, and the bone separated by a chisel after the method of Sir William Ferguson; or it may be sawed through, and then they are sprung together and the fissure thus closed. In this case four horse-hair sutures were used to hold the flaps together.

These side-incisions must be kept open by packing them, or removing the granulations each day, to prevent healing until the edges of the fissure are united. A gutta-percha splint is now fitted and worn over the palate. This prevents the food, fluids, and air from causing disturbance to the healing process.

I present wax models of this case, taken from casts of it before, during, and after completion of the operation.

It will be seen that the external appearance of the nose has not altered in shape, notwithstanding the nasal septum and bony palate upon which it rests, are gone. Have never seen the nose fall in, except when the cartilage or nasal or maxillary bones were involved,—in other words, the bridge of the nose.

CASE II.—Mrs. F. C., aged 21; born in New York State, was sent to me by Dr. J. Marion Sims. She was married in 1865; then quite healthy; has had three still-born children, and one now living.

In January, 1872, had inflammation of the brain, which was afterwards followed by inflammation of the bowels. In 1873 of a severe neuralgic pains on the bridge of the nose, centre of the hard palate, and left side of the face. This was followed by a swelling of the centre of the hard palate, and all the upper teeth were extracted. In December, 1873, when she came under my care, her condition was as follows: Her physical powers were very much reduced; constant pains in her head; a hole in the left canine fossa; great discharge from the nose and mouth. By rhinoscopic examination, and by a probe through the hole in the canine fossa, I discovered necrosis of the nasal septum and turbinated bones of both sides.

The specific origin of disease being recognized, she was put upon iodide of potassium, tonics, cod-liver oil with phosphates. December 26, as there was a good deal of pain and swelling of the nasal septum, it was lanced, and bled freely, and gave her great relief. January 4, 1876, lanced the nasal septum again. February 3, periostitis of the left nasal bone externally appeared; applied a leech. February 4, swelling and pain gone. February 9, patient having improved in strength, but still suffering intense pain, removed all the necrosed bone by the revolving knives. In this operation removed the vomer, lower portion of the ethmoid, inferior and middle turbinated, maxillary walls of both right and left antrum, and a good portion of the hard

palate. Present, Drs. George A. Peters, E. L. Keyes, F. R. Sturgis, and G. H. Fox. February 10, found the patient going about the house attending to some of her household duties; no pain since the operation. February 13, removed small pieces of the intermaxillary bone. March 6, had some swelling of the left side of the nose, extending under the eye.

Feeling herself so much better after the operation, she had neglected to take the potassium as ordered, and this is the penalty of such disobedience. Ordered a leech, and increased the dose of the iodide of potassium to four grammes per day. March 8, swelling very much reduced and pain nearly gone. March 10, pain and swelling gone. There was a small amount of pus on the left side of the nose, which was drawn away with the aspirator. April 10, patient expresses herself as being nearly well. Iodide of potassium reduced to two grammes every other day. Cod-liver oil to be continued. June 23, 1876, patient now quite well, and by a rhinoscopic examination no discharge was discovered. There now only remains the opening of the canine fossa to be closed.

#### NECROSIS OF VOMER AND VAULT OF THE HARD PALATE, ETC.

CASE III.—Dr. F. N. Otis, of New York, referred to me William H. G., aged 27 years, of London, England, who, before leaving home, had been under the care of Dr. R. Living and Dr. W. J. Coulson.

Two and one-half years ago had the specific initial lesion, and is now in the third stage.

He now has necrosis of the vomer and vault of the palate, with a small hole in it. Fetid discharge from the nose occasionally stained with blood from excessive granulations. Administered iodide of potassium and cod-liver oil. Local treatment consisted in blowing into the nasal cavities iodoform and camphor triturated to an impalpable powder, with subnitrate of bismuth and sulphate of potash to reduce the superabundant granulations, and so have less bleeding during the operation. By invitation of the late Professor James R. Wood, M.D., to deliver a clinical lecture on extirpation of bones of the mouth and nose, I operated on this patient at his clinic at Bellevue Hospital, January 15, 1880. Administered four ounces of whiskey before the operation, and kept him under the influence of nitrous oxide during the operation, which lasted about fifteen

minutes. No external incision was made, and the necrosed vomer, lower portion of the ethmoid, both inferior turbinated bones and vault of the hard palate, were removed by the revolving knives through the nostrils.

No portion of the soft tissue on the hard palate was removed. On the completion of the operation, he was directed to blow his nose to free his nasal cavity of the cut-up necrosed bones and blood, and then he was positively forbidden to again blow his nose for the next twenty-four hours. After that time the clotted blood is carefully removed by the dressing nasal forceps, and the nasal cavity completely covered by blowing in the iodoform and camphor powder.

On the second day a nasal douche is given before the application of powder.

On the next day after the operation he was able to attend to his daily duties.

The wax model illustrating his case shows the opening in the palate one-fourth inch in length before the operation. Atrophy of the nose before the operation, from the non-respiration and constant blowing of the nose, as seen in the right alie, and the development of the alie, as seen in the left side of the nose, after the operation.

The other model shows the opening in the palate closed and a new deposit of bone over the palate.

He is in perfect health at the present time.

My time or your patience will not allow me to extend the subject farther, or to show that tooth disease may lead to necrosis, caries, abscesses in jaws, antrum, salivary glands, tonsils, cheeks, throat, and nose, producing naso-pharyngeal catarrh, amarosis otalgia, and disturbing the whole system in many ways.

When we consider these many diseases, how important it is that they should receive proper attention. But it cannot be denied that there is a vast amount of ignorance in the profession in regard to them. And it is also to be deplored that a great number of oral, nasal, eye, and ear troubles are often the result of unskilled dental operations.

Out of such necessity comes a desire for instruction and improvement, hence the formation of this Section.

I sincerely trust that the day is not far distant when we shall have endowed universities where every branch of the *healing art* and allied sciences will be theoretically and practically taught.



Private Hospital  
for treatment of  
**Diseases of the Nose, Mouth and Throat.**

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CONSULTING STAFF :

J. R. Leaming, M.D., F. N. Otis, M.D., Joseph W. Howe, M.D.,  
R. P. Lincoln, M.D., D. B. St. John Roosa, M.D.

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D. H. GOODWILLIE, M.D.,  
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